

TAB M

Extract from RPU-106

**\*ARMY Declass/Release Instructions On File\***

Extracted from RPU-106, Radio Propagation Unit Technical Report, No. 4,  
August 1945 (Signal Corps)

**Factors Needed to Modify Required Field Intensities  
for Various Types of Services**

		Ratio of the field intensity required for intelligible reception to the field intensity required for radiotelephony	
Type of Radio Communications Service	Conditions of Operation	Intensity Ratio	Ratio in Decibels
<u>VOICE COMMUNICATIONS</u>			
Standard broadcast	Receiver band width 6kc each side of carrier; 38 db signal to noise ratio considered tolerable	20	26
International shortwave broadcast	Assume considerably more disturbance tolerable than on standard broadcast	5.6	15
Double sideband radio- telephony (Reference level)	Receiver band width 3 kc each side of carrier; 100% modulation; intelligibility 90%	1	0
Single sideband radio- telephony	Carrier suppressed 10 to 25 db	0.50	-6
<u>TELEGRAPH COMMUNICATIONS</u>			
Double sideband 1-tone voice frequency radio- teletypewriter system	1-channel 60 words per minute radioteletypewriter; one tone on marking tone off on spacing	.50	-6
Interrupted carrier radio- teletypewriter	60 words per minute - radio- teletypewriter; carrier on for marking, carrier off for spacing		
	Diversity reception	.25	-12
	Nondiversity reception	.40	-8
Single sideband two-tone voice frequency radio- teletypewriter system	Each channel 60 words per minute radioteletypewriter, one tone on marking, another tone on spacing		
	1-channel operation	.13	-18
	3-channel operation	.22	-13
	6-channel operation	.32	-10

Type of Radio Service	Conditions of Operation	Intensity Ratio	Ratio in Decibels
Double sideband two-tone voice frequency radioteletypewriter system	1-channel 60 words per minute radioteletypewriter; one tone on marking, another tone on spacing	.25	-12
High-speed automatic CW telegraphy	80-120 words per minute Diversity reception Nondiversity reception	.18 .28	-15 -11
Carrier shift system - "Diplex" radioteletypewriter	Two 60 words per minute radioteletypewriter channels operating simultaneously; diversity reception	.18	-15
Modulated CW manual telegraphy	100% modulation (required field intensity is inversely proportional to percentage modulation); signal received without use of BFO (use of BFO provides reception equal to or better than pure CW)	.18	-15
Manual CW telegraphy	Receiver band width 3 kc each side of carrier; 90% intelligibility at 10 words (cipher groups) per minute	0.14	-17
Double sideband four-tone voice frequency radioteletypewriter system	1-channel, 60 words per minute radioteletypewriter, two tones on marking, another two on spacing	.14	-17
Carrier shift system-radioteletypewriter	60 words per minute radioteletypewriter, shift 425 cycles each side of nominal carrier frequency; diversity reception	.10	-20
Single sideband four-tone voice frequency radioteletypewriter system	Each channel 60 words per minute radioteletypewriter; two tones on marking, another two on spacing 1-channel operation 2-channel operation 3-channel operation	.071 .10 .13	-23 -20 -18

Type of Radio Communications Service	Conditions of Operation	Intensity Ratio	Ratio in Decibels
--------------------------------------	-------------------------	-----------------	-------------------

FACSIMILE COMMUNICATIONS

Double sideband telephoto system	Diversity reception	.71	-3
	Nondiversity reception	1	0
Single sideband telephoto system	Diversity reception	.50	-6
	Nondiversity reception	0.36	-9
Carrier shift telephoto system	Diversity reception	.50	-6
	Nondiversity reception	0.36	-9